HOLMES & NARVER, Inc.
Pacific Southwest Region
ENGINEERS-CONSTRUCTORS

405705

TO: C. L. Coray, Project Manager JOB: 942

FROM: C. F. Dunlap, Resident Engineer RE: Weather Stations

R -

DATE: 14 June 1955

For your files and information, I am attaching the following data which we have compiled in connection with the proposed weather station program:

✓ 1. Sketch map of weather station area showing proposed routes for construction forces.

✓ 2. Marine craft, equipment, tentative schedule, general notes and personnel requirements for construction operations for Taongi and Kapingamarangi, using LSD and LCU support; Kusaie and Tarawa, using LST support; and Taongi and Kapingamarangi, using LST with towed LCU.

✓ 3. Copies of record of meeting held in the office of the Resident Engineer, Holmes & Narver, Inc., to establish criteria for four new weather stations.

✓ 4. Copy of log and construction notes of weather station reconnaissance trip 3 June through 9 June, by C. F. Dunlap.

— 5. Copy of marine notes taken by Mr. Beardall during reconnaissance trip for weather stations.

— 6. Reproducibles of bills of material for each of the four weather station sites.

7. Copies of drawings of site plans for each of four weather station sites (originals of the enclosed drawings are being mailed to M. R. Born under separate cover).

/s/ C. F. Dunlap
Resident Engineer

CFD:M
cc: M. R. Born, w/o enclosures
J. M. Lloyd, w/o enclosures
file

SKETCH MAP - OF PORTION OF PACIFIC OCEAN

EW - 5-10-55

THE STORY OF AN ATOLL

by
Robert W. Hiatt, Director
Eniwetok Marine Biological
Laboratory

Have you ever wondered how this little "rock" you are on came to be here in the center of this very deep ocean? Or have you ever thought about how secure you are from the elements of nature on a little earthen platform only 5 or 6 feet above the sea? Well, be assured that you aren't the first to hold such thoughts, for these problems have been uppermost in the minds of many scientists for over 200 years, and doubtless piqued early voyagers' curiosity since they were first seen by humans several centuries ago. I shall try to point out the most important facts discovered to date about this atoll, both from the standpoint of the origin of the limestone rock and from the geological processes that went on in the past to provide the foundations for atolls, particularly Eniwetok.

Let's begin with a simple description of Eniwetok Atoll. Approximately 30 small islands dot a broad reef platform which encircles a lagoon measuring about 20 x 25 miles in length and width. The total land area on these islets is only 2.5 square miles, or, if you come from the wide open spaces in the Midwest, a land area of about two and one-half sections, or 1,600 areas. The highest point of land is about 13 feet above mean sea level. The depth of the lagoon averages about 160 feet. Prior to turning the Atoll into the Pacific Proving Ground it supported a population of 121 natives who scratched out a bare existence from coconuts, arrowroot, and pandanus supplemented with sea food from the reefs and lagoon.

All the limestone you see about you, and the entire atoll including islands and reefs is limestone down to a depth of several thousand feet, has been produced by animals and plants. You are already familiar with "corals." But, take a real close look at a piece of coral. You are gazing at the skeleton of this animal which, like our own skeleton, was inside the flesh of a colony of coral animals. And, like our own skeleton is produced, this piece of coral was secreted by living cells of the coral animal's body. You can see many small holes or depressions in the coral skeleton. In each of these holes a small coral animal (called a polyp) lived, joined by a thin skin to his fellow members of the colony. These coral polyps look like miniature sea anemones, and really are, except that they produce a hard, limy skeleton whereas a sea anemone doesn't. They have tentacles which are used to catch small animals as food. You may be wondering why the living coral is brightly colored, yet the skeleton appears perfectly white. This is because a tiny single-celled plant lives inside the cells of the coral polyp, and this plant is variously colored. We'll have more to say about these little plants later.

These coral polyps feed and grow like other animals, and reproduce often just by having new polyp "bud" off the connecting skin between two adjacent polyps. In this way very large colonies will develop and grow where each polyp is attached to its neighbor, and they continually lay down more skeletons until some coral colonies (you probably call them coral heads) may reach a diameter and height of several feet. In one way or another these coral colonies get broken up so that there is always a lot of coral rubble and coral sand being produced. This loose material would remain unconsolidated if it were not for the kinds of sea weeds which also secrete a limy skeleton.

At the outer edge of the seaward reef where the waves beat down with considerable force you may have noticed a slightly elevated ridge of rock-like material. This really isn't a rock at all, but rather a hardened type of seaweed which we call a coralline alga. This alga secretes a limy covering to its tissues and in so doing incorporates sand and broken shell and coral fragments into it in such a way that it binds them together into a rock-like mass. Other types of plants assist in this process too. Thus, not only do plants help to produce the limy reef-building materials, they serve the important role of binding together all the corals and shells into a solid mass.

We have then seen that the limestone which makes up all the atoll substance we see is formed by corals, shelled animals and seaweeds, with seaweeds playing the important role of binding these fragments into a solid rock.

These living organisms have certain needs to remain living just as we do. For example, they require warm, agitated water and strong sunlight. Moving water is especially important for corals, since they are attached and can only get food which drifts to them. Because of these needs coral reefs are only found at shallow depths to which light rays penetrate in sufficient density.

The depth to which reef-building corals grow is controlled by the light penetration into the water. Apparently most reef-builders grow best from the surface down to about 90 feet, but a few grow to a depth of 300 feet, still shallow in comparison to the ocean depth of some 20,000 to 25,000 feet.

Because corals and other reef-builders are continually producing their limy skeletons, the reefs must be growing upward. The rate of this growth has been studied in various ways and it has been found to vary between one twenty-fifth to one half an inch each year. Different species have different growth rates and corals in different localities have different growth rates. One fact is universal, however, and that is all growth upward stops when the coral is exposed at low tide. Thus the only way a coral head can grow once it reaches the surface is laterally or horizontally. If you observe shallow corals on the reef platform you will note that the top is dead, but the sides continue to grow outward.

A coral reef is something like an oasis in the desert too. That is, the life on it and over it in the water is much more abundant than the life in the open sea or open lagoon bordering the reef. Because many of these marine organisms have shells and skeletons we find that the deposit of these skeletal remains from dead organisms is far greater on the reef than in the ocean or lagoon on either side. As a matter of fact, it is in the order of 1000 times greater. Thus this sediment tends to build the reefs upward much faster than the adjacent lagoon or ocean floor.

We have now learned something about the nature of reef-builders, but have not mentioned the various kinds of reefs in the world. Three types are recognized. First, the "fringing reef" which borders a high island forming an apron of limestone around its edge. This is the kind of reef found in the Hawaiian Islands. Second, the "barrier reef" which is a reef separated from its high island foundation by more or less broad lagoon. This is the type found off Northeastern Australia and known as the Great Barrier Reef. Third, is the "coral atoll", which we have just been describing.

Before we undertake the geological aspects of atolls, let's review the known facts about limestone producing organisms.

1. Limestone is produced by corals, coralline algae and many shelled animals.
2. The algae are also important in binding coral and shell fragments into solid rock.
3. Coralsand most coralline algae grow best in shallow, warm, clear water which is somewhat agitated.
4. All reef-building corals contain tiny plants within their cells. This fact may be very important in limiting reef-building corals to shallow water, because these plants must have sunlight to live. Whether or not they promote more vigorous growth of corals is still problematical.

In 1837 Charles Darwin, one of the most famous naturalists, proposed a theory to explain the origin of the three kinds of coral reef structures. He thought that volcanic mountains which rose above sea level in areas where coral would grow would soon have a fringing reef around them extending to about 200-300 feet. With the cessation of volcanic activity he assumed that the mountain would settle downward, along with a general substance of the sea bottom in the area. If the subsidence of the mountain were slow enough it would enable the upward growth of the coral fringe, particularly at its seaward edge where the water is agitated, to maintain the reef at the sea surface while the mountain slowly settled downward. In such cases the outermost edge of the reef would grow rapidly enough to keep up with the settling, but the inshore part, where the water was too quiet for the corals to flourish, would not grow upward rapidly enough to keep up with the rate of settling and would be submerged, thus forming a deep channel between the shore and the offshore reef edge. This explained how a barrier reef could be formed. With further subsidence of the sea bottom the mountain top would be submerged completely and the barrier reef, still keeping pace with the settling mountain by growning upward, would be all that remained of the original structure. In time the mountain top would be covered by sediment, coral algae growth, but would never grow upward as fast as the outer reef edge. This would explain the formation of the shallow lagoons.

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HOLMES & NARVER, INC.
Engineers - Constructors

TO : Messrs. C. L. Coray and J. M. Lloyd 13 June 1955

FROM : Charles F. Dunlap

SUBJECT: RECORD OF MEETING HELD IN THE OFFICE OF THE RESIDENT ENGINEER, HOLMES & NARVER, INC., TO ESTABLISH CRITERIA FOR FOUR NEW WEATHER STATIONS

At 1300 hours, 10 June 1955, a meeting was held in the office of the Resident Engineer, Holmes & Narver, Inc., to establish the requirements of the Air Force weather station operating personnel in order that firm plans and estimates could be developed for these facilities.

The following persons were in attendance at this meeting:

Commander Daniel F. Rex, USN, JTF SEVEN Advance Headquarters, Officer in Charge

Lt. Col. Willard D. Richardson, USA, JTF SEVEN Advance Headquarters

Capt. Joseph W. McDaniel, USAF, Air Weather Stations

Mr. William P. Deiffenbach, AACS

Mr. Claude L. Coray, Project Manager, Holmes & Narver, Inc.

Mr. Charles F. Dunlap, Project Engineer, Holmes & Narver, Inc.

The meeting was held in two stages with Commander Rex, Lt. Col. Richardson and Mr. Coray entering the meeting in the latter part for the final establishment of criteria. The following sites were discussed in detail and the items as listed below were jointly agreed upon.

TAONGI

1. 2 - 20' x 48' barracks buildings.
2. 1 - 20' x 48' Day Room
3. 1 - 20' x 48' Mess Hall
4. 1 - 20' x 20' Operations Building
5. 2 - 16' x 32' tents, on concrete slab, for Supply
6. 1 - 20' x 48' shelter for power and distillation units. (Single roof gable type, 3 sides closed).

TAONGI (Continued)

7. 1 - 16' x 36' shelter for walk-in reefers. (Shed roof only on wood posts).

8. 1 - 16' x 16' shelter for salt water pumps. (Shed roof with 3 sides closed).

9. 1 - Outfall sewer to ocean side, in lieu of septic tanks and disposal field).

10. 1 - 200 gallon per hour Cleaver-Brooks distillation unit with fresh water storage for five (5) days.

11. 4 - 15 KW, 220 - 110 volt, A.C., single phase, 60 cycle diesel generating units.

12. 4 - Walk-in reefers, 150 cubic foot each, electric driven.

13. 1 - 5' wide personnel pier, possibly using a Navy cube at the extreme end to provide off-loading of personnel and supplies from small craft.

14. 1 - 10' x 10' x 6" thick, concrete slab for Rawinsonde set.

15. 3 - Approximately 2' x 2' x 3'-6", concrete bases for antenna poles.
3 - Approximately 3' x 2' x 2', concrete deadman anchors for <u>each</u> pole.

16. 2 - Salt water pumps, set near shore, complete with piping, etc.

17. 2 - Fresh water pumps, complete with piping.

18. 1 - Tank (Navy cube) for salt water storage.

19. 2 - Tanks for diesel storage. (Set 6' above grade).

20. 1 - Power distribution center with necessary breakers, switches, etc.

21. 1 - Rainwater catchment system, consisting of necessary gutters and transfer pipes to the fresh water storage tanks.

The following material and equipment only, will be furnished by the Military (Air Force):

1. Mess Hall equipment and furniture.

2. Galley equipment and furniture (except one 50-gallon hot water heater, furhished by Holmes & Narver, Inc.)

3. Operational and office equipment and furniture.

4. Dispensary equipment and furniture.

5. Barracks storage and Recreation room equipment and furniture.

6. All communication equipment, (AACS furnished), with the exception of bases and anchors for antenna poles and guy wires.

TAONGI (Continued)

The Mess Hall equipment, Galley equipment and Dispensary equipment will be installed by Holmes & Narver, Inc., but all communication and operational equipment will be installed by the User and/or personnel supplied by the Military.

TARAWA

The facility at this site will be identical with that at Taongi, with the following exceptions:

1. 2 - Sewage disposal systems shall be provided, one for sanitary sewage and one for industrial wastes. These systems to be essentially as shown on drawing No. 53003-1Q1, dated 1/25/55, "Typical Layout for Buildings - JTF SEVEN Outlying Weather Sites."

2. 5 - Walk-in reefers of 150 cubic foot each, shall be provided.

3. An operations and supply building, 20' x 48' on concrete slab with wood frame, corrugated aluminum siding and corrugated aluminum double roof, shall be provided.

4. 1 - 10' x 10' base for the Rawinsonde set, shall be provided, on top of the existing concrete double quonset type storage bunkers at the site.

5. Personnel pier will not be provided.

KAPINGAMARANGI

The facilities at this site will be the same as provided for Taonigi, with the following exceptions:

1. 5 - Walk-in reefers of 150 cubic foot each, will be provided.

2. 1 - 20' x 48' operations and supply building will be provided, to consist of concrete floor with wood frame, corrugated aluminum siding and corrugated aluminum double roof.

KUSAIE

It has not been determined, as yet, whether the proposed weather station at Kusaie will occupy the site of the existing weather station which has the Operations building located approximately 1/4 mile distant at another site, or if a site shown on Hydrographic Chart No. 5420, known as Bezin Point, can be secured. Bezin Point is the best suited, both from size, location and condition of site; however, the availibility of this site is undetermined at this time.

The facilities at either site at Kusaie, will be identical with those at Taongi, with the following exceptions:

1. The personnel pier will not be provided.

RUSAIE (Continued)

2. 1 - 20' x 48' operations and supply building on concrete slab with wood frame, corrugated aluminum siding and corrugated aluminum double roof, shall be provided.

3. A fifth (5th), 15 KW diesel generating unit will be needed, if it is desired to locate the proposed weather station at the site of the existing weather station. This will be necessary, due to the fact that the operations building will be located at a site removed from the main camp.

SUMMATION:

In order to establish the type of building to be furnished, Lt. Commander Rex, Col. Richardson, Capt. McDaniel and the writer, made a short trip on Parry Island to inspect several different types of construction, and it was jointly agreed that the best interests of the weather station program would be served by the use of buildings composed of concrete floor, wood frame, corrugated aluminum siding and roof, but with a double roof on the barracks, Day Room, Mess Hall and Operations/Supply buildings for protection against high temperatures.

The necessary site plans and other drawings for each site are being prepared, together with material take-off and construction notes necessary for estimating. Until these drawings are complete, Drawing No. 53003-1Q1, dated 1/25/55, "Typical Layout for Buildings JTF SEVEN Outlying Weather Sites", may be used for general information with the exceptions as noted in the above discussion by weather station sites.

At this date it is not determined if complete drawings and material take-off will be made at Jobsite, or if necessary information will be furnished the Home Office for the preparation of drawings and estimates. In either case, we plan to furnish the Home Office with the necessary information so that current estimates can be prepared by the Home Office Estimating Department.

C. F. DUNLAP
RESIDENT ENGINEER

CFD:fjb

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Weather: Clear

3 June 1955

Leave Eniwetok at 0800 hours.

Arrive Kwajalein at 1100 hours.

Cdr. Rex, Lt. Col. Richardson, Captain McDaniel and Lt. Bachert arrived Kwajalein at 1330 hours.

General meeting at Guest House, Kwajalein on 3 June at 1500 hours, attended by original party plus Col. McGoldrick and Cmdr. Sloan.

1. Additional weather stations will be Honeria, Wairs, Wanus and Funi Futi, which will be operated possibly by Australia.

2. All camps to be completed by 1 March.

3. We will not visit Majuro until after visit to Tarawa.

4. Cdr. Rex reported at the meeting that no firm plans for station siting had been made. In the case of Nikati (Makin) or as a possible alternate - ocean island, which are all under the jurisdiction of the Australian Trust Territory, the High Commissioner at Tarawa would be contacted first for available sites before any recon. of sites. Upon landing at Tarawa, Cdr. Rex, Col. Richardson, Mr. Wynkoop and the pilot will visit the Trust Territory office and determine which sites are available. Following this recon. of available sites will be made to determine site best adapted.

5. Cdr. Rex reported that the general overall plan was to provide minimum facilities at all sites to reduce logistic problems for construction and support. Type of construction can and is to be as best suited to individual site, and will be generally determined by the type of craft which can beach at that particular site.

6. The expressed desire of all present is to firm up a definite plan for scheduling before members disperse after final meeting at Eniwetok.

7. General flight plan was altered as follows:

(A)* Kwajalein to Tarawa 4 June. Overnight at Tarawa and possible flight to Makin or Ocean Island 5 June, and return to Kwajalein 5 June P.M. (Overnight at Kwajalein).

(B) Kwajalein to Jaongi 6 June and return to Eniwetok P.M. of 6 June. (Overnight at Eniwetok).

(C) Eniwetok to Ponape 7 June and overnight at Ponape.

(D) Ponape to Kapingamarongi 8 June and return to Ponape or Eniwetok 8 June .

ALT. (E) Ponape to Eniwetok 9 June and overnight at Eniwetok.

(F) Eniwetok to Kusaie 10 June and return to Eniwetok 10 June P.M.

* Majure would be visited upon return trip of (A) if time permits.

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TAONGI & KAPING WITH LST SUPPORT CRAFT

1 - LST
1 - LCU (Towed)

EQUIPMENT

1 - D-8 Dozer w/blade
1 - D-7 Pull Cat
1 - Crawler Crane
1 - 375 Cfm Compressor
1 - Fuel Tanker
1 - Contractor's Pump w/1500 L.F. Rainmaker Pipe
1 - Skiploader (end loader)
1 - Skipload Mixer (½ C.Y.)
1 - Dump Truck (small)

TENTATIVE SCHEDULE (Assume 150 mi./day for LST towing LCU)

1.	LST leaves Eniwetok	3 September (A.M.)
2.	LST arrive Taongi (450 mi.)	6 September (A.M.)
3.	Offloading Equipt & Matls. - 7 days (13 Sept.)	
	Construct. Time - 36 days (19 Oct.)	
	Backloading Eqpt. & Matls. - 7 days (26 Oct.)	
4.	Depart Taongi for Eniwetok	26 October (P.M.)
5.	Arrive Eniwetok	29 October (P.M.)
6.	Reload & Depart Eniwetok for Kaping	2 November (P.M.)
7.	Arrive Kaping - (780 mi.)	8 November (P.M.)
8.	Offload Equipt. & Matls. - 6 days (14 Nov.)	
	Const. Time - 36 days (20 Dec.)	
	Backload Eqpt. & Matls. - 7 days (27 Dec.)	
9.	Depart Kaping - for Eniwetok -	28 December (A.M.)
10.	Arrive Eniwetok	3 January (P.M.)

GENERAL NOTES

1. The above schedule based on passage at Taongi being blasted & Clear of obstructions.
2. Above schedule timed to meet slackwater tides.
3. This operation (both sites) based on 2 daily shuttle trips between LST at slack water tides, as personnel will live aboard LST. This is an alternative to establishing beachhead camps. LCU cannot be used as a houseboat as it will be necessary to keep LCU clear for transporting equipt. & mats.
4. At Taongi it will be necessary to blast 4 small coral heads near shore at landing site before beaching LCU.
5. Above schedule based on fair weather conditions.

MARINE PERSONNEL (Around the clock watch for tow.)

2 - Large Craft Operators
1 - Small Craft Operator
2 - Marine Enginemen
1 - Apprentice Engineer
2 - Marine Deckhands
[redacted] - Total

CAMP PERSONNEL

1 - Cook
1 - Cook's Helper

CONSTRUCTION PERSONNEL

1 - Instrumentman
1 - Rigger
2 - Equipment Operators (Incl. Mechanic)
1 - Oiler
1 - Plumber
2 - Electricians
8 - Carpenters
7 - Laborers
1 - Painter
2 - Power & Distill. Mechs.
1 - Foreman
27 - Total

General Notes:

1. Install 1 Badger distillation unit on each houseboat to complement normal fresh water supply (7200 gals.)
2. Above schedule based on passage at Taongi being blasted and clear of obstructions.
3. Above schedule timed to meet slack water tides.
4. At Taongi it will be necessary to blast 4 small coral heads near shore at landing site before beaching LCU.

Total Marine Personnel for Taongi and Kapingamarangi

4 - Large Craft Operators
4 - Small Craft Operators
4 - Marine Engineman
4 - Apprentice Engineers
4 - Marine Deckhands
2 - Amphibious Truck Operators

22 Total

Total Camp Personnel for Taongi and Kapingamarangi

2 - Cooks
2 - Dishwasher/Helper

4 Total (2 per site)

Total Construction Personnel

2 - Instrumentman
4 - Equipment Operators (Including Mechanic)
2 - Riggers
2 - Oilers
2 - Plumbers
4 - Electricians
16 - Carpenters
14 - Laborers
2 - Painters
4 - Power & Distillation Mechanic
2 - Foreman

54 Total (27 men per site)

Recap

22 Marine
4 Camp
54 Construction

80 Total (40 men per site)

TAONGI & KAPINGAMARANGI (Simultaneously)

Craft (Total for 2 sites)

* 1 - LSD
* 4 - LCU (2 fitted for houseboats)
2 - DUKW (H&N furnished and manned)

* These craft to be furnished by Navy but manned by H&N.

Equipment (Total for both sites)

2 - D-8 Dozer w/blade
1 - D-7 Full Cat (Remain on LCU on LSD)
2 - Crawler Crane without Bucket
2 - 375 C.F.M. Compressor
2 - Fuel Tankers
2 - Contractor's Pumps w/1500 Ft. Rainmaker Pipe
2 - Skip Loader (End Loader)
2 - Skip Load Mixers (1/2 C.Y.)
2 - Dump Trucks (Small

Tentative Schedule (Assume 200 miles per day for LSD)

1. LSD leaves Eniwetok — 1 October (A.M.)
2. LSD arrive Taongi (450 miles) — 3 October (A.M.)
3. Off load 1 construction crew and equipment using 2 LCU's to shuttle equipment and material to site; 1 LCU to remain as houseboat and 1 DUKW to remain.
   Off loading completed, leave Taongi 5 October (A.M.)
4. Arrive Eniwetok — 7 October (P.M.)
5. Load equipment and material and leave Eniwetok - 8 October (A.M.)
6. Arrive Kapingamarangi (780 miles) — 12 October (P.M.)
7. Off load 1 construction crew, equipment and material, using 2 LCU's to shuttle equipment and material to site; 1 LCU to remain as houseboat and 1 DUKW to remain.
   Off loading completed, leave Kapingamarangi - 14 October (P.M.)
8. LSD return direc to Taongi, arrive Taongi - 20 October (P.M.)

   Note: Allowing 36 construction days at Taongi from 5 October - 9 November.

9. Back load construction crew, equipment and craft, depart Taongi for Eniwetok - 11 November (A.M.)
10. Arrive Eniwetok - 13 November (P.M.)
11. Depart Eniwetok for Kapingamarangi - 14 November (P.M.)
12. Arrive Kapingamarangi - 18 November (A.M.)

    Note: Allowing 36 construction days at Kapingamarangi from 14 October - 20 November.

13. Back load construction crew, equipment and craft, depart Kapingamarangi - 21 November (P.M.)
14. Arrive Eniwetok - 25 November (A.M.)

[redacted] OFFICIAL USE ONLY

14 June 1955

J-4/ 600.1
SUBJECT: Construction of Weather Stations

4. An LST would be requested to arrive in the forward area on 1 November 1955. This ship would take the H&N construction personnel and equipment to Kusaie and after completion of this camp, would be used during December for the building of the station at Tarawa. During January 1956, she would be available for the Eniwetok-Bikini schedule. In February 1956, the LST would transport the AWS personnel and equipment to Kusaie and then the latter part of the month, take the operating personnel and equipment to Tarawa. After this mission is completed, she would be available on a full time basis for the Eniwetok-Bikini work.

5. It is requested that every effort be made to furnish the necessary LCUs and other small craft from those presently on hand or to be made available in the PPG. Should additional craft be needed, then a letter setting forth these requirements with dates desired should be submitted to JTF SEVEN Admin with information to this Headquarters.

6. As generally agreed between Mr. Coray (H&N), Mr. Dunlap (H&N), Cdr Rex (JTF-7 Adv), Lt Col Richardson (JTF-7 Adv) and Capt McDaniel (AWS), the type construction for the 5- 20' x 48' buildings at Kapingamarangi, Kusaie and Tarawa will be double aluminum roof, aluminum sides, wood studs, rafters and braces with concrete floors.

7. Only repairs such as screens, reinforcing of floors for heavy equipment where necessary, and other minor repairs, will be made on the five present buildings at Rongerik.

8. It is felt that all of the heavy equipment, with the exception of the radio vans, should be purchased and installed by H&N at time of construction. This will consist of the following at each of the four (4) camp sites:

a. 1 - ea Distillation unit, 200 gallons per hour

b. 1 - ea Electric hot water heater, 50 gallon

c. 4 - ea Diesel power units, 15 KW, 115/230 volts, 60 cycle, single phase.

d. 4 - ea Electric walk-in refrigerators, 150 cu ft (5 - at Tarawa and 5 - at Kapingamarangi).

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[redacted]

COPY

HOLMES & NARVER, INC.
Engineers - Constructors

TO: Resident Manager

JOB: 942

FROM: Resident Engineer RRG

RE: Weather Station Inspection Trip

DATE: 19 February 1959

On February 16 and 17 the writer with Mr. Wayne Hiatt of AEC made an inspection of weather station facilities at Ujelang and Kapingamarangi atolls. During the inspection the following observations were made:

1. Ujelang Atoll

   Facilities in various stages of minor disrepair, none of which appeared to be the result of vandalism. Mooring buoy for aircraft in need of repairs or replacement.

2. Kapingamarangi Atoll

   Facilities in good condition, POL drums in satisfactory condition.

The night of February 16 was spent at Ponape Atoll. Mr. Finale and Mr. Mahoney of the Trust Territories were contacted and informed of the nature of the mission to Kapingamarangi Atoll. Mr. Mahoney accompanied the mission to Kapingamarangi Atoll and was of valuable assistance in conveying a feeling of appreciation to the native chief for the natives' part in the preservation of the facilities at that site.

RRG:jm

cc: J/S Chrono
J/S Central
J/S Engineering
J/S Engineering Reading File

HOLMES & NARVER, INC.
Engineers - Constructors

From JF 3653 2/3/60 DAJ

TO: E. H. WILLES

FROM: M. P. CURRAN

JOB: 942

RE: Survey Mission, Ponape & Kusaie, 9 - 11 Sept. Inclusive

DATE: 9-11-57

L O G

9 September 1957

0730 - Departed Site Elmer. Mr. Bucholz, AEC; Curran, Dalton, Riggsbee of Survey Department

0930 - Boarded UF-1 at Site Fred Airstrip. Mr. Zweigbaum, 6.4 aboard.

0945 - Airborne

1210 Eniwetok Standard Time = 1110 Ponape Standard Time. - Landed on Lele Harbor.

(Ponape Time used hereafter)

1200 - Arrived Ponape village.

1230 - All parties conferred with Mr. Hedges.

1300 - At proposed site, commenced survey.

1715 - Survey completed.

10 September 1957

0600 - Turn to.

0610 - Left Ponape dock.

0710 - Aboard Transocean Airlines plane, airborne. Party included Messers. Bucholz, Zweigbaum, Hedges - District Administrator Ponape and a group of local people.

0915 - Arrived Kusaie, commenced survey.

1045 - Completed Weather Station Survey. Proceeded to proposed 6.4 site.

1130 - At 6.4 site commenced survey.

1230 - Completed survey, returned to Kusaie village for lunch.

1300 - Commenced negotiation of leases.

1500 - Negotiations completed, boarded plane.

1508 - Airborne

10 September 1957 Continued

1712 - Arrived Ponape Harbor.

1800 - Arrived at quarters.

11 September 1957

0730 - Turn to.

0837 - Left dock

0938 - Airborne - same party that departed Eniwetok 9 Sept.

1210 - Ponape Time - arrived Site Fred.

1310 - Eniwetok time - arrived Site Fred.

1330 - Arrived Site Elmer.

K U S A I E

Weather Station Site "A" Ref. FS 6124 - 1. The easterly boundary of Area No. 1 was tentatively moved 32 ft. east to provide space for three 8 Man tents proposed by Mr. Emens.

2. Construction of the three tents would require destruction of the following:
19 Banana Plants
2 Breadfruit Trees
12 Coconut Trees
8 Orange Trees

3. The increase in area outlined in paragraph 1 is 0.06 Acres. It lies within the boundaries of the same landholder that has title to the land presently shown as Area No. 1 on FS 6124.

Weather Station Site "B" Ref. FS 6124 - 1. Proposed addition of 10 ft. to the southwesterly end of Bldg. No. 4 in order to double the existing plumbing can be done. There are no space or construction problems.

2. No space is available in location shown on H & N proposal for an additional 48x20 barracks. The space is now occupied by buildings recently constructed by Mr. Youngstrom. The only possible location is that occupied by another building recently constructed by Mr. Youngstrom northeast of Bldg. No. 5 and along the northeasterly boundary. Mr. Bucholz made a tentative agreement with Mr. Youngstrom to remove his building to make way for the proposed barracks.

K U S A I E (Contd.)

Weather Station - Site "B" Ref. FS 6124 Continued

3. The same considerations outlined in paragraph 2 apply to the location of an 8 man tent as proposed by Mr. Emens.

4. There are no food producing plants or trees involved in any of the proposed changes.

5. No increase in acreage will be required.

6.4 Site Ref. H/O Ch. 5420 -

1. A site was selected by Mr. Zweigbaum on the northeasterly end of Kusaie Island. It is a rectangular tract 175 ft. east-west along the shoreline and 525 ft. south (inland). It is located wholly within FUNAUNPES section.

2. From the high tide line inland 200 ft. to the road the surface is sand with scattered rock. From the road to the southern boundary the surface is muck of the consistency of heavy clay with numerous outcrops of rock.

3. The following were estimated and concurred in by Mr. Hedges:
Coconut trees, one per 200 sq. ft. or 460
Breadfruit trees - 12
Pandanus trees - 24
Papaya trees - 3
Banana Plants - 20

4. The area of the site is 2.2 acres.

5. The site is approximately 3 miles from the Weather Station on Lele Is. A causeway connects Lele Is. to Kusaie Is. A bridge is located in the center of the causeway with a span of 25 ft. It is constructed of native timbers laid across the opening with a deck of 1/2 inch steel plate. A similar bridge spans a stream east of the site.

Mr. Bucholz and Mr. Hedges discussed reinforcing both bridges using native materials and labor. However it appears that the abutments would limit loads. It appears that 1 1/2 ton trucks should be the largest vehicles used. If it is necessary to use heavy equipment, it appears practical to walk it across the reef at low tide at the causeway and at the other bridge to leave the road and ford the stream.

P O N A P E

Weather Station - Ref. FS 6342

1. A tract essentially as shown on the referenced field sketch was staked and surveyed. An additional sketch will be made showing the topography and the relation to existing culture.

2. There are no food producing plants or trees on the proposed site.

P O N A P E (Contd.)

Weather Station - Ref. FS 6324 Continued

3. The area of the site is 0.60 Acres.

4. Sewer - The manhole is a concrete structure 2 ft. in diameter with a present inlet and outlet of 6" steel pipe. It is located 262 ft. north of, and across the road from, the site. Introduction of an additional inlet would require rebuilding the structure or replacing same with a standard manhole shell. Due to the depth of the earth cover, (2 ft. maximum) it is recommended that the lateral run 5' west of and parallel to the power pole line to a point across the road and 5' south of the manhole. From this point the line would deflect 45°, run 7.07 ft. to another 45°, cross the road at rt. angles to the manhole. the line under the road should be cast iron with a concrete sleeve.

5. Water - It is recommended that a water supply line be run from the 6" main west of the site. This would be run at the side of the access road running east-west 138 ft. south of and parallel to the site to a point 5 ft. west of the power pole line thence north and parallel to the power pole line to the site. The length of pipe required is from 150 to 200 ft. greater than a direct run from the main to the site. However, other construction planned for the area makes the shorter run inadvisable. It is not recommended that connection be made to either of the 2" lines near the site as the outlets to those are so numerous that it is probable that pressure would frequently be low.

6. Power - A transformer bank is presently mounted on a platform between two poles 10 ft. apart and 60 ft. north of the northeast corner of the site. The transformers are inadequate for the site requirement of a peak demand of 70 K.W. Mr. Dupont, Trust Territory Construction Supt., states that transformers must be installed by the AEC contractor to meet the requirement and that his generator capacity is more than adequate.

7. Paragraphs 4, 5 and 6 were read by Mr. Dupont, Construction Supt. for the Ponape District and his concurrence attested by his signature of the field notes.

MPC:jlm

cc: J/S Chrono
J/S Central
J/S Survey (2)
J/S Engineering
J/S Engr. Reading File
J/S Job Folder #1108
J/S Job Folder #3658
Chief, Eniwetok Branch, USAEC, (6)

HOLMES & NARVER, INC.
Engineers - Constructors

TO: E. H. Willes

JOB: 942

FROM: M. P. Curran MPC

RE: Surveys of Weather Stations, Sites at Ponape, Kapingamarangi and Kusaie

DATE: 13 July 1957.

Tuesday, 9 July 1957

0615 Survey party standing by at Engineering Office.

0650 Personnel truck arrived, loaded gear, boarded M-boat at ramp.
Joined by Ray Emens, AEC
Capt. Short, Kwaj. Nav. Air Sta. Com.
UF-1 Officers
A. J. Gergely, HICOM Legal Adviser
Survey Party, H&N, M. P. Curran
E. R. Klanchar
M. E. Moran

0735 Passengers and equipment aboard UF-1

0750 Airborne

1010 Landed, Ponape Harbor

1020 Disembarked on Langar Island ramp

1030 Boarded picket boat

(0930 local time, used hereinafter)

1020 Landed at Ponape

1030 Conferred with Dr. Mills, DISTAD Asst. in Administration Office. Accompanied Emens to Weather Station Site. Pointed out to Emens that site was unsuited to proposed building program. Emens agreed but said the location was firm.

1130 Returned to Administration Bldg.

1215 Survey party departed for site, commenced survey on arrival.

1530 Emens and Mr. Hedges, DISTAD arrived. Relocated site.

1615 Returned to quarters.

Wednesday, 10th July

0730 Surveyors departed for site, commenced survey. Remainder of party made trip by UF-1 to Kapingamarangi.

1130 Lunch

1215 Concluded survey
1715

General - The site appears to be well suited to the requirements. There are no food producing plants or trees. The acreage is 1.66, with 408 ft. frontage on the road and a depth averaging 190 ft.

Conferred with the following - Mr. Keith Logan, Surveyor and Cartographic Engineer:

There is presently no horizontal control on Ponape. It does not appear likely that any will be established in the near future. However, the present H&N survey is tied to existing structures and the corners of the site are monumented. Future recovery should present no difficulties.

Vertical control is presently being established. Mr. Logan ran levels to one of the corner monuments set by H&N on 10 July. However, he must rerun the levels due to a discrepancy in the work. He has promised to mail the results to H&N Engineering within a week from 10 July. At the same time he will include the elevation of the water supply outlet as discussed later.

Mr. Edw Homling, Site Superintendent, Pomeroy Construction Co:

Mr. Homling states that the road to the site area is scheduled for completion 15 August 1957, and the camp 1 September 1957. He says that these schedules will be met if there are no further changes in the road alignment or the site location, both of which have changed a number of times.

The facility on which he is working will have three 600 KVA generators. He has no idea of what demand will be required by the facility.

Mr. Max Woitschek, Observer in charge, U. S. Weather Bureau:

The surface wind direction at the station is predominantly Northeast throughout the trade season. During July and August it is near East with periods south of east.

Mr. Dupont, Public Works Officer:

The following equipment is available for off-loading ships:

One self-propelled pontoon barge, 60 ton capacity, deck space for 4 dump trucks or 1 "cat" and 1 carryall.

One 500 ton barge limited by pier side water depth to 200 tons capacity.

Ships must anchor in the roadstead and furnish crane.

There is no power supply in the weather station site area. The reservoir illumination is provided by a small portable generator presently working at capacity.

He also pointed out that the potable water must come from the chlorination plant which is below the reservoir. The elevation of the outlet of the chlorination plant is one of the items before mentioned which Mr. Logan engaged to furnish.

~~OFFICIAL USE ONLY~~

Thursday, 11 July

0530 Turn to

0555 Aboard launch at dock

0640 Boarded Transocean sea plane on Langar Island ramp

0703 Airborne - Party-Mr. Hedges, District Administrator
Mr. A. J. Gergely
Mr. R. C. Emens and surveyors

0920 Landed on Lele Harbor, Kusaie

0930 Ashore, commenced survey

1015 Advised that survey of Youngstrum property should be cancelled by Mr. Emens. Proceeded to Hilton property.

1100 It was decided by Mr. Emens that two drum storage areas be bounded and included in land leased from Mr. Hilton after consulting with Messieurs Hedges and Hilton.

1210 Completed survey returned to dock, returned survey gear to plane, using outrigger canoe, returned ashore.

1350 All passengers aboard.

1406 Airborne.

1555 Landed on Ponape Harbor

1625 Boarded launch.

1700 Disembarked at Ponape dock.

12 July, Friday

0715 Turn to

0930 Boarded launch at dock

1005 Disembarked at seaplane ramp, Langar Island

1035 Boarded plane. Emens, survey, Capt. Short.

1045 Airborne

(1145 Eniwetok time used hereinafter)

1410 Landed at Eniwetok. Surveyors and Mr. Emens to Site Elmer by Personnel Dept. truck and M-boat.

MPC:hg

cc: E. Wynkoop, AEC (2)
J/S Survey

J/S Chrono
J/S Central
J/S Engineering
J/S Engr. Reading File
Job Folders #1107, 1108 and #3658.

HOLMES & NARVER, INC.
Engineers - Constructors

TO: C F Dunlap

JOB: 942

FROM: M P Curran

RE: Surveys of Weather Station Sites at Rongelap, Utirik, Wotho & Ujelang Atolls

DATE: 5 July 1957

1 July 1957

0530 Personnel Department truck aboard an M-boat departed site ELMER ramp. Party as follows:

Ray C Emens, AEC
M P Curran, H & N
E. R. Klanchar, H & N
M E Moran, H & N

0555 Disembarked at site FRED

0615 Arrived at C-47 terminal

0700 Boarded C-47

0710 Airborne

0930 Arrived Kwajalein Naval Air Station

1000 Airborne aboard UF-1 928

1115 Dropped message over Rongelap village requesting Trust Territory personnel to rendezvous with our party at Jaabwan village.

1130 Anchored off Jaabwan village, Rongelap Island, Rongelap Atoll. Crew rigging life raft. CO_2 cylinders inadequate, inflation completed by hand pump. Motor mounted, refused to start.

1155 Party aboard raft, paddled ashore.

1210 Party ashore, commenced survey. Found survey points used in recent construction work undisturbed. Continued this traverse around the southerly end of the island at approximate high tide line. A site was selected with Mr. Emens concurrence. During the course of the survey, Mr. Tobin, Distad representative, and Mr. Gergely, Hicom legal advisor, arrived at the proposed site. They informed Mr. Emens that it was necessary for them to return to Rongelap village to pick up Mr. Sideris, Trust Territory Agriculturist, and their luggage; also to obtain lease signatures.

1500 Survey completed, boarded raft (Emens, Gergely, Tobin, Curran, Klanchar, Moran).

1520 UF-1 underway (taxiing) with raft in tow. Estimated area of proposed site at 3.65 acres. No food producing trees on site.

1615 Anchored off Rongelap village. Tobin and Gergely went ashore.

1705 Tobin, Gergely, Sideris, and native hitch-hiker came aboard.

1710 Airborne

1820 Arrived at Kwajalein Naval Air Station.

1900 Arrived at assigned quarters.

2 July 1957

0730 Passengers (Emens, Tobin, Gergely, Sideris, Curran, Klanchar & Moran) aboard UF-1, 928.

0807 Airborne.

0950 Landed and anchored off weather station site, Utirik.

1030 Tobin, Gergely, 3 H & N men boarded raft.

1035 Ashore, commenced survey. Raft returned to plane for Emens & Sideris.

1335 Concluded survey. In course of same Tobin concurred in location of lines. Estimated area of site at 1.1 acres. There are 90 coconut and 4 pandanus trees on the site. Natives state the following were destroyed during construction:

12 Coconut
1 Breadfruit
4 Pandanus

1355 3 H & N aboard UF-1.

1425 Emens, Tobin, Gergely and Sideris came aboard.

1505 Airborne.

1630 Arrived at Kwajalein Naval Air Station.

3 July 1957

0715 Passengers aboard UF-1, same party as 2 July.

0735 Airborne.

0835 Landed off weather station site, Wotho.

0850 Survey party ashore, commenced survey. Raft returned to plane for remainder of party.

1215 Survey of 3 sites completed.

1240 Party aboard UF-1.
Weather station site has 60 coconut and 5 pandanus trees. 2 coconut trees destroyed during construction. Station 562.01, 7 coconuts, 8 pandanus. Station 562.02, 6 pandanus. Natives state that 100 coconut trees were destroyed in construction of all 3 sites. Weather site estimated at 0.66 acres.

1355 Crew came aboard.

1435 Airborne.

1555 Arrived at Eniwetok. Tobin and Curran to Elmer on L-20, remainder to Elmer by truck and M-boat. All arriving at 1650.

4 July 1957

0710 Departed Elmer airstrip on H-19.

0725 Party at UF-1 on Fred airstrip.

0740 Crew arrived.

0820 Airborne.

0915 Landed off weather station site, Ujelang.

0955 Surveyors, Tobin, Gergely aboard raft. Motor quit immediately after getting underway. Paddled ashore.

1015 Ashore, commenced survey.

1200 Completed survey. Native sleeping hut, warehouse and copra shed on site. Tobin states that they will remain and the lease will be so drawn.

1330 Arranged with native to take surveyors to UF-1 in rowboat.

1350 Boarded UF-1, reported to Emens. Sideris went ashore in native rowboat.

1502 Tobin, Gergely and Sideris came aboard. The following trees are on the site:

85 Coconuts
30 Pandanus

Natives report 2 coconut and 2 pandanus destroyed during construction. Area estimated at 1 acre.

1520 Airborne.

1620 Arrived at Eniwetok. Tobin remained to continue aboard UF-1 to Kwajalein, remainder of party to site Elmer by truck and M-boat.

1705 Arrived site Elmer.

General: Each site fell within a single Wato.

MPC:rb

cc: E Wynkoop
J/S Survey
J/S Chrono
J/S Engineering
J/S Central

HOLMES & NARVER, INC.
Engineers - Constructors

TO: Resident Manager

JOB: 942

FROM: Resident Engineer

RE: Weather and Rad-Safe Surveys for Rongelap, Utirik, Wotho and Ujelang

DATE: 8 July 1957

We are transmitting herewith reports of the subject survey which was accomplished by A.E.C. and Holmes & Narver, with Mr. M. P. Curran representing Holmes & Narver.

The attached report dated 5 July 1957 is concurred in by this office and is to be incorporated in the overall report of this survey.

For your information and files we are attaching copies of the metes and bounds description of these sites, together with drawings which reflect the traverse of the area to be occupied by these stations.

CFD:rb
Encl: Memo from M.P. Curran to C.F. Dunlap, dated 5 July 57.
Legal Descriptions of subject sites.

cc: R. R. Alvy, w/encls.
H/O Chrono
H/O Central
J/S Chrono
J/S Central
AEC-EBO, w/encls.
J/S Engineering
J/S Engr. Reading File
J/S Job Folders 3655, 3659
3660, 3714

ROUGH DRAFT

WEATHER STATION SITE
UTIRIK Island, UTIRIK Atoll

Legal Description.

Commencing at point A, the northwesterly corner on the top of the bank on the lagoon shore.

Thence by a line 159.0 feet long bearing South 59 degrees East to point B.

Thence by a line 325.0 feet long bearing South 33 degrees West to point C.

Thence by a line 175.5 feet long bearing North 32 degrees West to point D.

Thence by a line 243.0 feet long bearing North 33 degrees East to the point of beginning.

The above described site is located near the mid-point of the lagoon shore of UTIRIK Island, UTIRIK Atoll, and is a portion of BATLUKPE WÄTO.

The area within the above described boundaries is 1.04 acres, more or less.

A plat of the site, prepared by Holmes and Narver, Incorporated, for the Atomic Energy Commission is shown on a drawing, F.S. 6314, Weather Station Plat, UTIRIK Island, UTIRIK Atoll. This drawing is considered to be incorporated in, and a part of, this lease agreement.

SUGGESTED CONDITION OF LEASE AGREEMENT.

The lessor grants, and the lessee has the right to, access to install such underground utilities to the lagoon as may be considered necessary by the lessee.

ROUGH DRAFT

WEATHER STATION SITE

UJELANG Island UJELAND Atoll

Legal Description.

Commencing at point A, the northeasterly corner, on the top of bank on the lagoon shore.

Thence by a computed line 223.5 feet long bearing South 08 degrees West to point B.

Thence by a line 223.5 feet long bearing North 86 degrees West to point C.

Thence by a computed line 282 feet long bearing North 03 degrees East to point D.

Thence by a computed line 249 feet long bearing South 72 degrees East to the point of beginning.

The above described site is located near the middle of the lagoon shore of UJELANG Island, UJELANG Atoll, and is a portion of AKADRIK WÄTO.

The area within the above described boundaries is 1.35 acres, more or less.

A plat of the site, prepared by Holmes and Narver, Incorporated, for the Atomic Energy Commission is shown on a drawing, F.S. 6318, Weather Station Plat, UJELANG Island, UJELANG Atoll. This drawing is considered to be incorporated in, and a part of this lease agreement.

SUGGESTED CONDITION OF LEASE AGREEMENT.

The lessor grants, and the lessee has the right to, access to install such underground utilities to the lagoon as may be considered necessary by the lessee.

ROUGH DRAFT

RAYDIST STATION 562.01
WOTHO Island WOTHO Atoll

Legal Description.

Commencing at point A, the southwesterly corner, on the top of bank of the lagoon shore.

Thence by a line 250 feet long bearing North 13 degrees East to point B.

Thence by a line 100 feet long bearing South 77 degrees East to point C.

Thence by a line 250 feet long bearing South 13 degrees West to point D.

Thence by a line 100 feet long bearing North 77 degrees West to the point of beginning.

The above described site is located near the northwesterly end of the lagoon shore of WOTHO Island, WOTHO Atoll and is a portion of ENEJU WÄTO.

The area within the above described boundaries is 0.57 acres, more or less.

A plat of the site, prepared by Holmes and Narver, Incorporated, for the Atomic Energy Commission is shown on a drawing, F.S. 6316, RAYDIST Station 562.01 Plat, WOTHO Island, WOTHO Atoll. This drawing is considered to be incorporated in, and a part of, this lease agreement.

SUGGESTED CONDITION OF LEASE AGREEMENT.

The lessor grants, and the lessee has the right to, access to install such underground utilities to the lagoon as may be considered necessary by the lessee.

ROUGH DRAFT

RAYDIST STATION 562.02
WOTHO Island WOTHO Atoll

Legal Description.

Commencing at point A, the northeasterly corner, on the top of bank of the ocean shore.

Thence by a computed line 106 feet long bearing South 16 degrees East to point B.

Thence by a computed line 187.5 feet long bearing South 54 degrees West to point C.

Thence by a computed line 128 feet long bearing North 07 degrees West to point D.

Thence by a computed line 164 feet long bearing North 58 degrees East to the point of beginning.

The above described site is located at the westerly end of that part of the ocean shore running in an east west direction; said shore being the northern part of WOTHO Island, WOTHO Atoll. The site is a portion of BIKINI WÄTO.

The area within the above described boundaries is 0.44 acres, more or less.

A plat of the site, prepared by Holmes and Narver, Incorporated, for the Atomic Energy Commission is shown on a drawing, F.S. 6317, RADIST Station 562.02 Plat, WOTHO Island, WOTHO Atoll. This drawing is considered to be incorporated in, and a part of, this lease agreement.

SUGGESTED CONDITION OF LEASE AGREEMENT.

The lessor grants, and the lessee has the right to, access to install such underground utilities to the ocean as may be considered necessary by the lessee.

ROUGH DRAFT

RAYDIST STATION CAMP SITE
WOTHO Island WOTHO Atoll

Legal Description.

Commencing at point A, the southerly corner, on the top of bank of the lagoon shore.

Thence by a line 110 feet long bearing North 46 degrees East to point B.

Thence by a line 261 feet long bearing North 44 degrees West to point C.

Thence by a line 110 feet long bearing South 50 degrees West to point D.

Thence by a computed line a distance of 267 feet long bearing South 44 degrees East to the point of beginning.

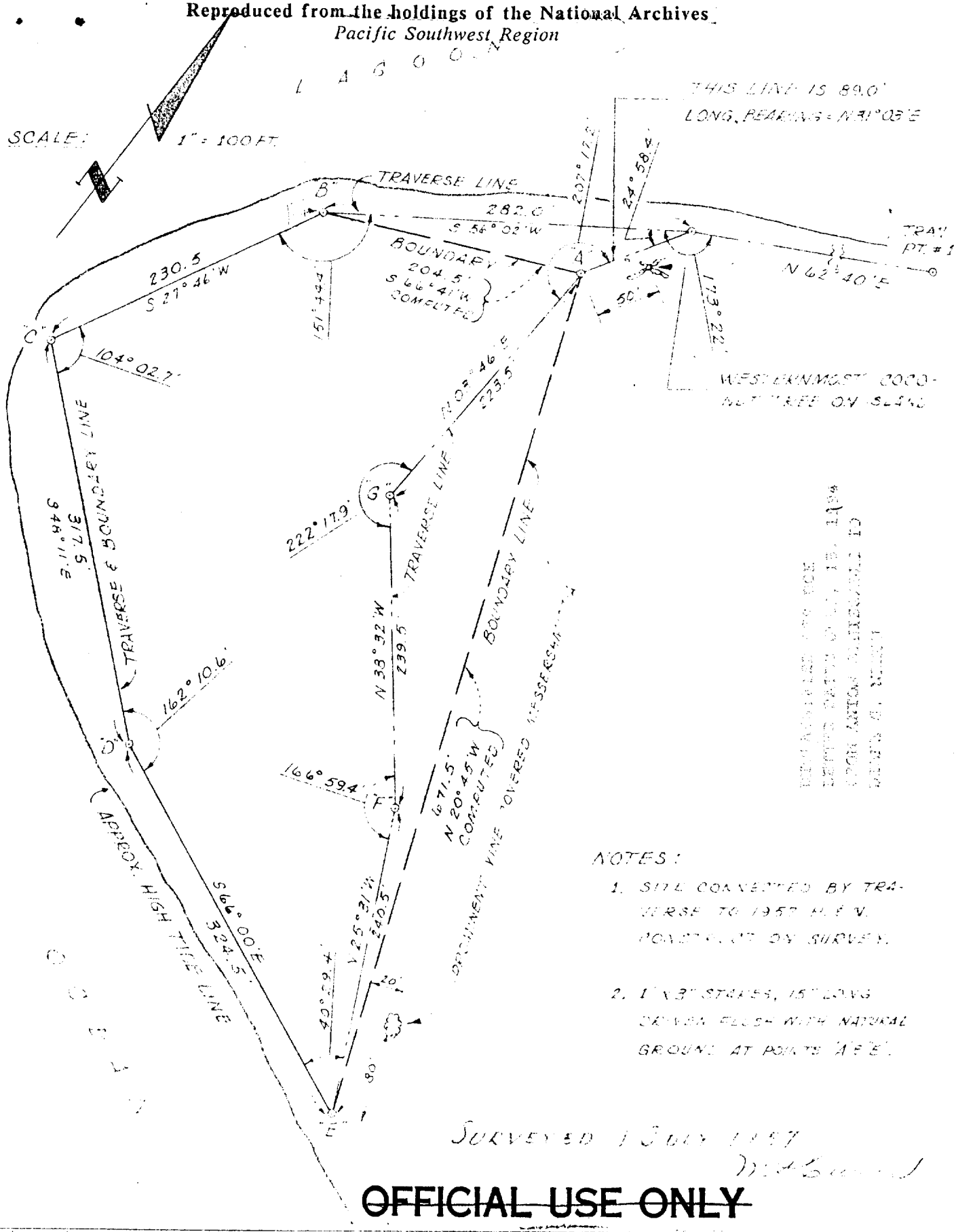
The above described site is located near the midpoint of the lagoon shore of WOTHO Island, WOTHO Atoll, and is a portion of MIJDRAT WĂTO.

The area within the above described boundaries is 0.67 acres, more or less.

A plat of the site, prepared by Holmes and Narver, Incorporated, for the Atomic Energy Commission is shown on a drawing, F.S. 6315, RADIST Station Camp Site plat, WOTHO Island, WOTHO Atoll. This drawing is considered to be incorporated in, and a part of, this lease agreement.

SUGGESTED CONDITION OF LEASE AGREEMENT.

The lessor grants, and the lessee has the right to, access to install such underground utilities to the lagoon as may be considered necessary by the lessee.



OFFICIAL USE ONLY

REV.	DATE	DESCRIPTION	CH'K.	APP.

WEATHER STATION PLAT

RONGELAP ISLAND — RONGELAP ATOLL

JOB NO. 942

W. O. NO.

DRAWN BY A.L.C.

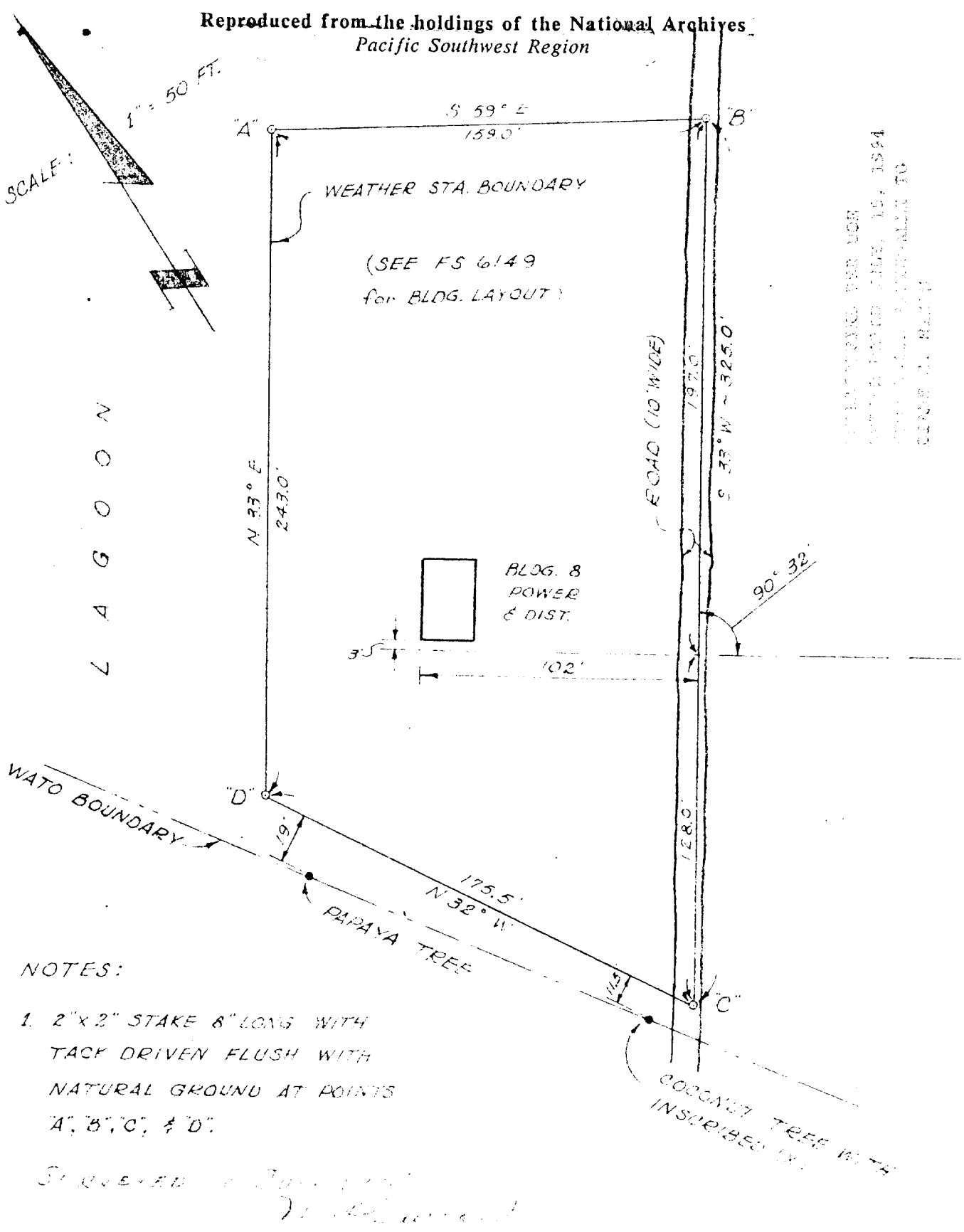
CHECKED BY A.[illegible]

APPROVED: H & N A.E.C.

DATE 7-[illegible]

HOLMES & NARVER, INC. ENGINEERS—CONSTRUCTORS

DRAWING NO. ES 6715



NOTES:

1. 2"x 2" STAKE 8" LONG WITH TACK DRIVEN FLUSH WITH NATURAL GROUND AT POINTS "A", "B", "C", & "D".

OFFICIAL USE ONLY

REV.	DATE	DESCRIPTION	CH'K.	APP.

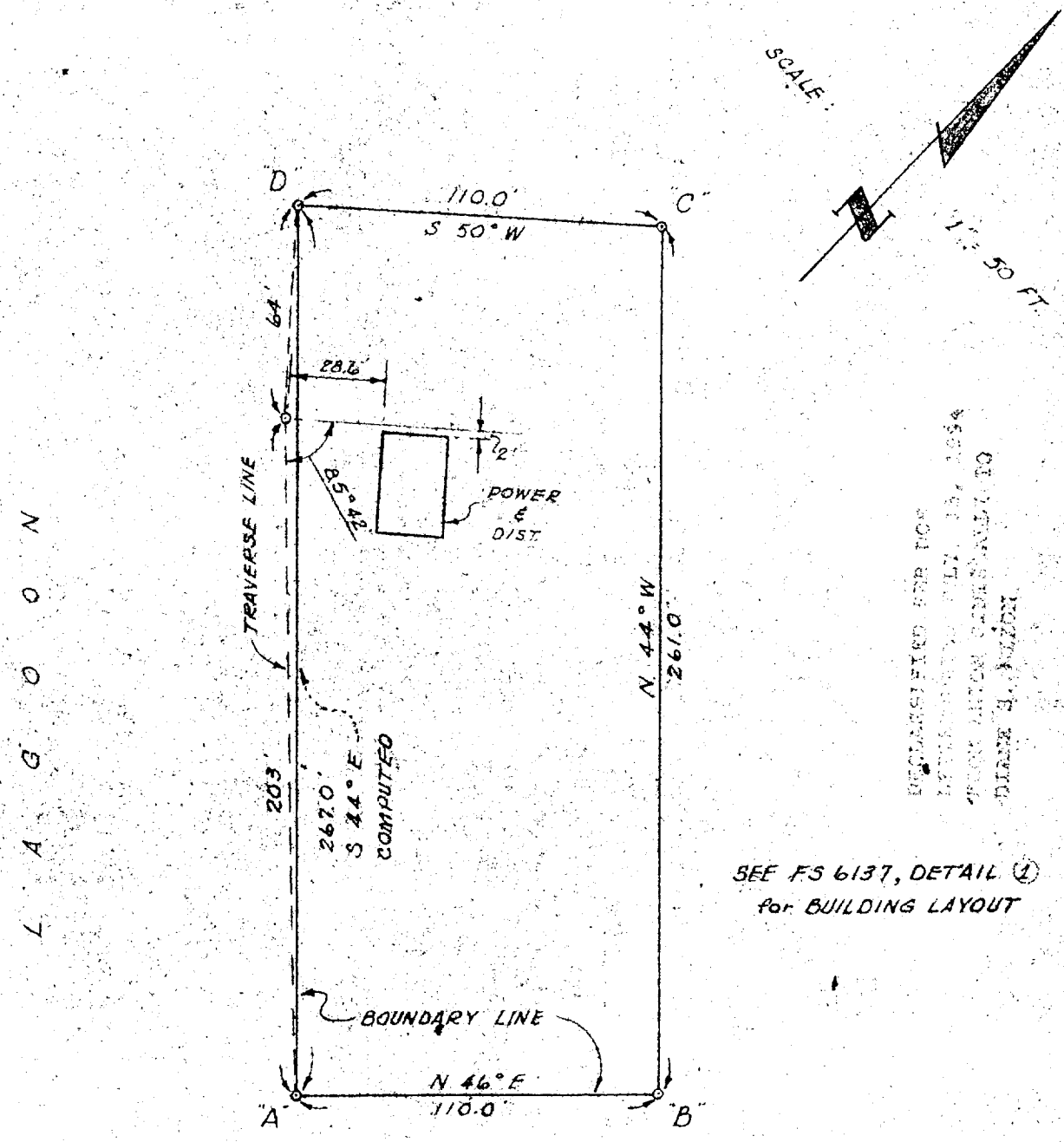
WEATHER STATION PLAT
UTIRIK ISLAND — UTIRIK ATOLL

JOB NO. 942
W. O. NO.

DRAWN BY ALO
CHECKED BY
APPROVED: H & N, A E C
DATE

HOLMES & NARVER, INC.
ENGINEERS—CONSTRUCTORS

DRAWING NO. FS6314



SEE FS 6137, DETAIL (1)
for BUILDING LAYOUT

SURVEYED 3 JULY 1957

NOTE:
1" x 4" STAKES, 15" LONG WITH
TACK DRIVEN FLUSH WITH THE
NATURAL GROUND AT POINTS "A", B, C &D.

OFFICIAL USE ONLY

REV.	DATE	DESCRIPTION	CH'K.	APP.

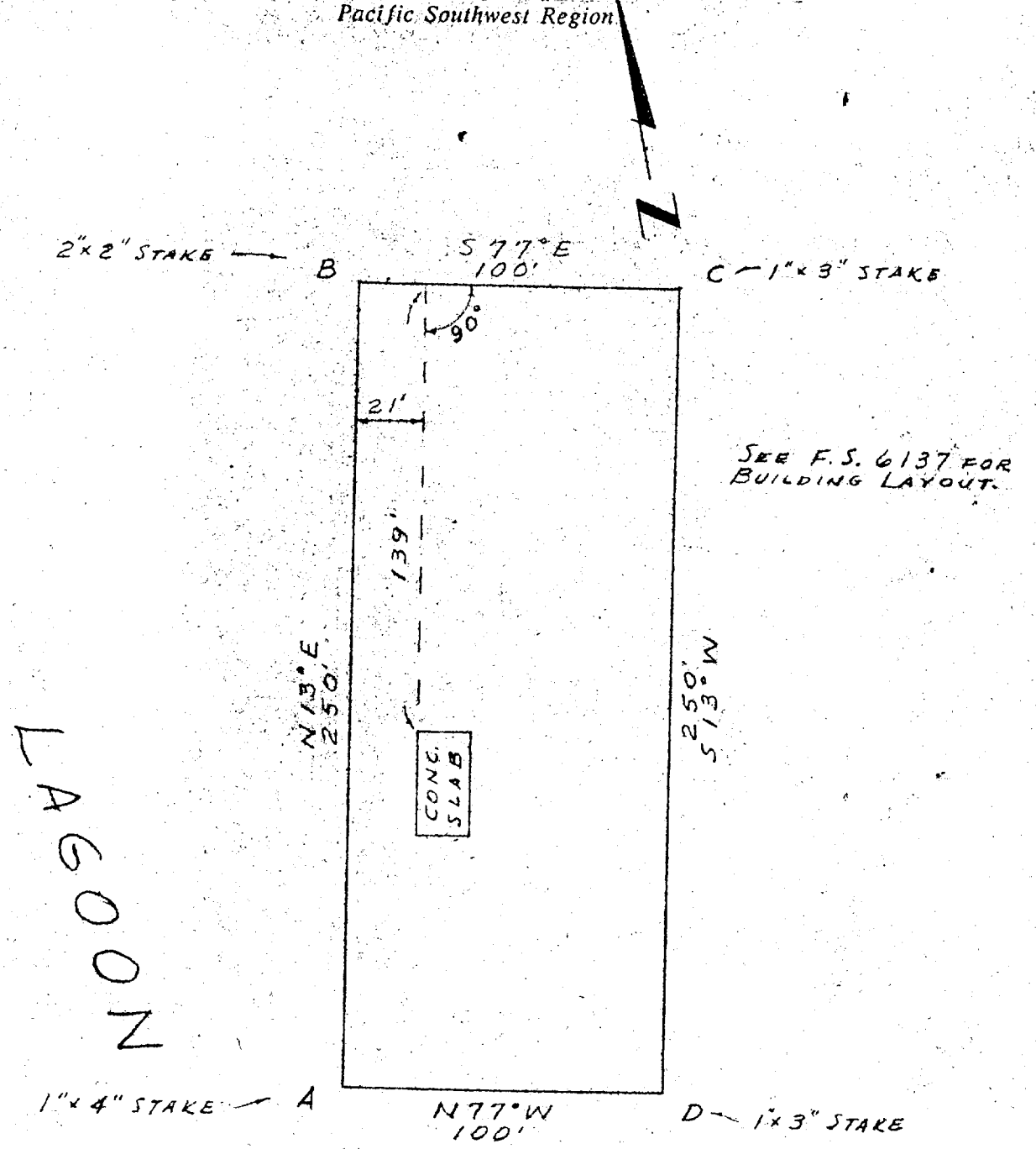
RAYDIST STATION
CAMP PLAT
WOTHO ISLAND WOTHO ATOLL

JOB NO. 942
W. O. NO.

DRAWN BY ALD
CHECKED BY
APPROVED: H & N. AEC
DATE 7-9-57

HOLMES & NARVER, INC.
ENGINEERS-CONSTRUCTORS

DRAWING NO. FS 6315



SEE F.S. 6137 FOR BUILDING LAYOUT.

SURVEYED 3 JULY 1957

M R Curran

REV.	DATE	DESCRIPTION	CH'K.	APP.

RAYDIST STATION 562.01
PLAT
WOTHO ISLAND WOTHO ATOLL

JOB NO.

W. O. NO.

DRAWN BY M.P.C.

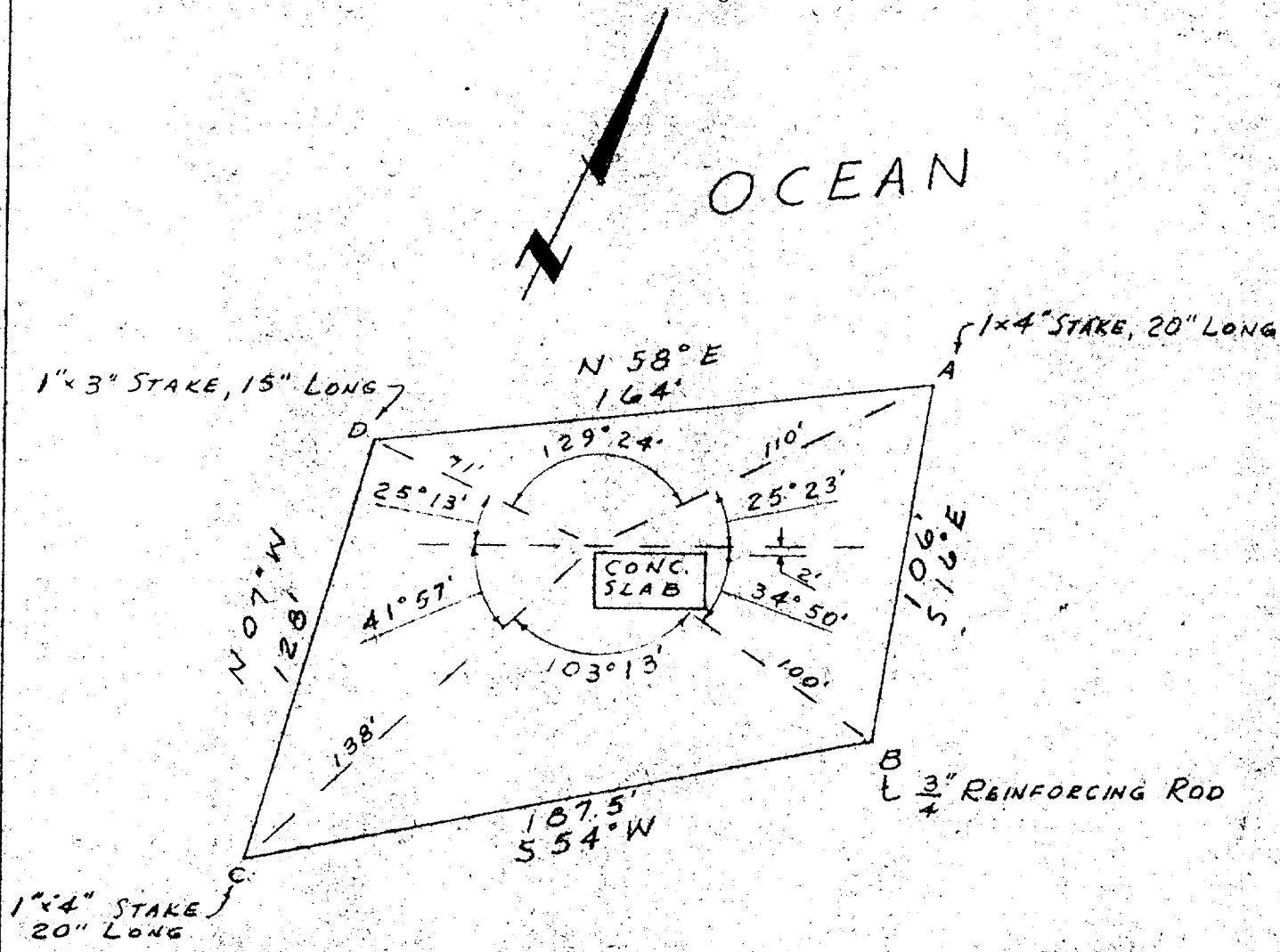
CHECKED BY E.S.

APPROVED:
H & N.
A E C

DATE 7-8-57

HOLMES & NARVER, INC.
ENGINEERS-CONSTRUCTORS

DRAWING NO. F.S. 6316



SEE F.S. 6137 FOR BUILDING LAYOUT.

SURVEYED 3 JULY 1957
M.P. Curran

OFFICIAL USE ONLY

REV.	DATE	DESCRIPTION	CH'K.	APP.

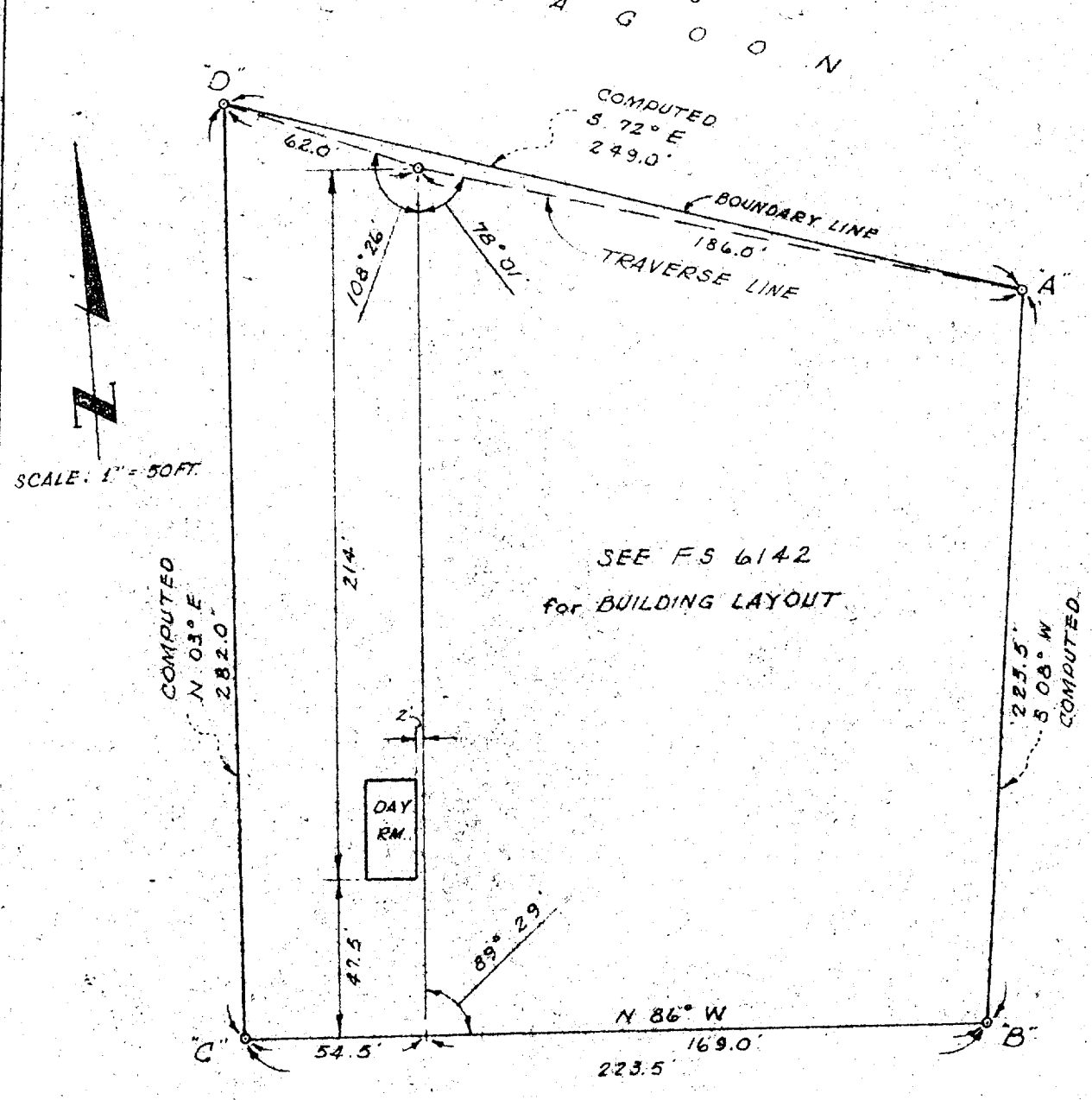
RAYDIST STATION 562.02
PLAT
WOTHO ISLAND WOTHO ATOLL

JOB NO.
W. O. NO.

DRAWN BY M.P.C.
CHECKED BY E.S.
APPROVED: H & N. Ernest Wynkoop
A E & Ernest Wynkoop
DATE 7-8-57

HOLMES & NARVER, INC.
ENGINEERS—CONSTRUCTORS

DRAWING NO. F.S. 6317



NOTE:
1"x3" STAKE 15" LONG WITH TACK DRIVEN FLUSH WITH NATURAL GROUND AT POINTS "A", "B", "C" & "D".

SURVEYED 4 JULY 1957

M B Currand

OFFICIAL USE ONLY

REV.	DATE	DESCRIPTION	CH'K.	APP.

WEATHER STATION PLAT
UJELANG ISLAND ~ UJELANG ATOLL

JOB NO. 942
W. O. NO.

DRAWN BY ALO
CHECKED BY M. P. C.
APPROVED:
H & N
AEC
DATE 7-8-57

HOLMES & NARVER, INC.
ENGINEERS—CONSTRUCTORS

DRAWING NO. FS 6318

ROUGH DRAFT

WEATHER STATION SITE
RONGELAP Island RONGELAP Atoll

Legal Description.

Commencing at point A, the northeasterly corner, on the top of the bank of the lagoon shore approximately 2000 feet west of the westerly boundary of MWEENLAB WÄTO.

Thence by a line meandering the top of bank around the westerly end of the island as follows:

From A by a line 204.5 feet long bearing South 66 degrees 41 minutes West to point B.

Thence by a line 230.5 feet long bearing South 27 degrees 46 minutes West to point C.

Thence by a line 317.5 feet long bearing South 48 degrees 11 minutes East to point D.

Thence by a line 324.5 feet long bearing South 66 degrees 00 minutes East to point E, the southeasterly corner, on the top of the bank of the ocean shore.

Thence by a computed line a distance of 671.5 feet long bearing North 20 degrees 45 minutes West to the point of beginning.

The above described site is located at the westerly end of RONGELAP Island, RONGELAP Atoll and is a portion of KABIJEBWÖN WÄTO.

The area within the above described boundaries is 3.61 acres, more or less.

A plat of the site, prepared by Holmes and Narver, Incorporated, for the Atomic Energy Commission is shown on a drawing, F.S. 6313, Weather Station Plat, RONGELAP Island, RONGELAP Atoll. This drawing is considered to be incorporated in, and a part of, this lease agreement.

SUGGESTED CONDITION OF LEASE AGREEMENT.

The lessor grants, and the lessee has the right to, access to install such underground utilities to the lagoon or ocean as may be considered necessary by the lessee.

JF 1106
JF 1107

HOLMES & NARVER, INC.
Engineers - Constructors

To: C. F. Dunlap
From: J. S. Coe
Job: 942
Re: Inspection of Weather Stations and Facilities - Kapingamarangi and Kusaie
Date: 13 April 1957

JF 1107

On April 9, 1957, Mr. W. C. Bush of the AEC and I departed Ponape Atoll on or about 0730 and arrived at the island of Fumatahachi in Kapingamarangi Atoll about 1100. An inspection was made of the existing buildings and facilities, and the following will be required to place the weather station in an "as-built" condition for occupancy.

BUILDING No. 1 - PUMP HOUSE:

Appears to be in good condition and ready for equipment installation.

BUILDING No. 2 - SUPPLY WAREHOUSE:

Requires replacement of one shutter on the South end of the building, a new latch set on the exterior door, and cleanup.

BUILDING No. 3 - WATER TOWER:

Requires no rehabilitation. In good condition with two Navy Cubes in place.

BUILDING No. 4 - POWER & DISTILLATION:

Requires replacement of Square D switch and switch gear for booster pump. A new ground wire for the generator is required. Some extra piping and copper tubing may be needed when installation of equipment is undertaken. 50% of the rain troughs need replacement.

BUILDING No. 5 - MESS HALL:

Apparently in good condition. Some cleanup required prior to occupancy.

BUILDING No. 6 - REEFER BANK:

In good condition. Normal cleanup required before equipment installation.

BUILDING No. 7 - BARRACKS #1:

In good condition. Normal cleanup and shower room equipment installation required before occupancy.

BUILDING No. 8 - DAY ROOM:

Minor repairable damage to one shutter and normal cleanup required.

BUILDING No. 9 - BARRACKS #2:

A latch set for one interior door is required. Shower room equipment installation and normal cleanup is also required before occupancy.

COPY

OFFICIAL USE ONLY

BUILDING No. 10 - RAWINSONDE TOWER:

This structure was almost totally destroyed. Two of the four piers for the tower could be utilized in rebuilding the structure. However, the platform consisting of two Navy Cubes with concrete cap is not useable.

GENERAL:

The sewer outfall appears to be still in usable condition. Both antennaes are in very good condition. Provision should be made to furnish several rolls of screen, several lengths of various size pipe, and some lengths of different size cables.

At 1510 the writer and Mr. Bush departed Kapingamarangi Atoll and arrived at Ponape at 1800 hours.

JF 1108

On April 10, 1957 an inspection was made of the weather station in Kusaie after the party had landed there at 1100. The following will be required to place the weather station in an "as-built" condition for occupancy.

BUILDING SITE "A"

BUILDING #1 - SUPPLY & OPERATIONS:

Needs new screens throughout, and replacement of two doors.

BUILDING #2 - GENERATOR SHED:

In good condition. Requires routine cleanup prior to equipment installation.

BUILDING #3 - RAWINSONDE TOWER:

Base and tower in good condition. Ready for equipment installation.

BUILDING #4 - PIT LATRINE:

Should be entirely replaced.

BUILDING #5 - FUEL TANK BASE:

In good condition and ready for piping equipment.

BUILDING SITE "B"

BUILDING #1 - REEFER BANK:

In good condition. Needs normal cleanup prior to equipment installation.

BUILDING #2 - MESS HALL:

Fifty percent (50%) of the screening needs to be replaced, the remainder brushed and cleaned, and normal building cleanup accomplished before occupancy.
& repaint

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